

13. JAN. 2005 14:08

H L B B 01788 540783

NO. 7824

10/521349

DT-12 Rec'd PCT/PTO 13 JAN 2005

The European Patent Office  
D-80298 MUENCHEN  
Germany

**By Fax & Mail**

30 September 2004

Dear Sirs

**Re: International Patent Application No PCT/US03/22528  
MeadWestvaco Corporation  
Our File PWO041439**

We refer to the Written Opinion dated 1 September 2004. We enclose the applicant's response, amended pages 1 to 2b and amended claims 1 to 19 which replace the claims presently on file. We also enclose a marked up copy illustrating the amendments for ease of reference. The amendments are drafted to reflect the observations made by the Examiner.

The Examiner is respectfully requested favourably to reconsider the application in light of the observations and claims as now submitted. We request detailed Examination and issuance of the second written opinion, if appropriate.

The limitation proposed in the amended claims must not be construed as abandonment of any subject matter thereby excluded: the applicant expressly reserves the right to file one or more divisional applications.

Please acknowledge receipt of this letter and enclosures by stamping and returning the attached acknowledgement slip.

Yours faithfully

**J M Hepworth**  
*Authorised Representative*

Encl

JMH/LH/WO1439-2

**Response to the Written Opinion dated 1 September 2004**

**International Patent Application No PCT/US03/22528**  
**MeadWestvaco Corporation**  
**Our File PWO041439**

The specification should be amended as follows:

In the description

Pages 1 to 2: cancel and replace with amended pages 1 to 2b attached hereto.

The description has been amended to bring it into conformity with the claims.

In the claims:

Claims 1 to 19: cancel and replace with amended claims 1 to 19 attached hereto.

Original claims 1 to 19 are cancelled on a without prejudice basis and with specific reservation of the right to make the subject matter of the deleted claims or any of them, the subject of a divisional application.

This is the applicant's response to the Written Opinion dated 1 September 2004 dealing with the paragraphs of the Written Opinion in order:

The right to file a divisional application upon the excised matter is reserved.

The writer requests the opportunity of a telephone interview with the Examiner should the Examiner following this response disagree that the application complies with EPC, but feel that a further Article 96 Communication cannot be issued. Additionally, or alternatively, the Representative requests on behalf of the Applicant the opportunity of an interview on a face-to-face basis in Munich. Furthermore, the Representative requests on behalf of the Applicant additionally or alternatively that Oral Proceedings should be appointed so that the Applicant may have the opportunity of being heard in this matter prior to issue of any refusal under Article 97 (1) EPC.

**J M HEPWORTH**

**Hepworth Lawrence Bryer & Bizley**

**PRODUCT CONTAINER WITH LOCKING END CAP****BACKGROUND OF THE INVENTION**

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**Field of the Invention**

The present invention relates generally to the field of product packaging, and in particular to product containers having a locking end cap.

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**Description of the Prior Art**

Product packaging serves a number of different functions, including: protecting the packaged product from accidental damage, attractively displaying the packaged product, and preventing theft or tampering. In addition, it is desirable for a package to be as inexpensive to manufacture as possible.

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There is an ongoing need in the packaging industry for new package designs.

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**SUMMARY OF THE INVENTION**

A first aspect of the invention provides a package, comprising:

a sleeve including at least one end defining an opening, the sleeve including at least one locking tab extending therefrom, the locking tab including a locking edge, the locking tab being folded inwards into the opening; and

25

a rigid end cap including a substantially continuous outer surface that is dimensioned to fit closely within the opening, the end cap further including a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving the locking tab, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the

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channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

- 5            Preferably, the end cap includes a cavity shaped to receive an end of a product to be packaged.

            Preferably, the end cap includes support ribs extending radially from the cavity to an interior wall of the end cap.

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            Alternatively, there further includes a second cavity shaped to receive a second end of a product to be packaged.

- Preferably, the end cap includes support ribs extending radially from each  
15    cavity to an interior wall of the end cap.

            Preferably, the end cap includes a support rib extending across the end cap, between the two cavities.

- 20           Alternatively, the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

- Preferably, each of the locking tabs is trapezoidal and has an acute vertex that rides up a side edge of the channel when the end cap is twisted relative to the sleeve,  
25    such that the end cap is released from the sleeve.

- Preferably, the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

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            Alternatively, the sleeve includes a second end defining a second opening, and wherein the package further comprises:

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a second locking tab extending from the second end and folded inward into the second opening, the second locking tab having a locking edge.

- 5 A second end cap having a substantially continuous outer surface dimensioned to fit closely within the second opening, the second end cap including a rim overhanging the outer surface such that, when the second end cap is inserted into the second opening, the rim engages the second sleeve end and prevents the second end cap from being inserted further into the second opening, the second end cap including
- 10 a channel for receiving the second locking tab, the channel having a ledge that engages the locking edge of the second locking tab to prevent the second end cap from being removed from the second sleeve opening.

A second aspect of the invention provides an end cap, comprising:

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a substantially continuous outer surface that is dimensioned to fit closely within an opening in a sleeve end;

- a rim overhanging the outer surface such that, when the end cap is inserted
- 20 into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving a locking tab extending from the sleeve, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end cap
- 25 is releasable by twisting the end cap relative to the sleeve.

Preferably, there further includes a cavity shaped to receive an end of a product to be packaged.

- 30 Preferably, there further includes support ribs extending radially from the cavity to an interior wall of the end cap.

Alternatively, there further includes a second cavity shaped to receive a second end of a product to be packaged.

2b

Preferably, there further includes support ribs extending radially from each cavity to an interior wall of the end cap.

- 5        Preferably, there further includes a support rib extending across the end cap, between the two cavities.

Alternatively, the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

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Alternatively, the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

- 15        A third aspect of the invention provides a method for fabricating a package, comprising:

- (a)    cutting and scoring a sleeve blank to create first and second panels, a glue flap extending from the first panel, and locking tabs extending from each of the  
20    panels;
- (b)    folding the second panel over the first panel;
- (c)    folding the glue flap and affixing it to the second panel, the first and second panels forming a sleeve;
- (d)    folding the locking tabs inward into the sleeve;
- 25    (e)    inserting a rigid end cap into a first end of the sleeve, the end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the first end of the sleeve;
- (f)    loading a product into the sleeve;
- (g)    inserting a second rigid end cap into a second end of sleeve, the second  
30    end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the second end of the sleeve.

**We claim:**

## 1. A package, comprising:

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a sleeve including at least one end defining an opening, the sleeve including at least one locking tab extending therefrom, the locking tab including a locking edge, the locking tab being folded inwards into the opening; and

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a rigid end cap including a substantially continuous outer surface that is dimensioned to fit closely within the opening, the end cap further including a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving the

15 locking tab, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

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2. The package of claim 1, wherein the end cap includes a cavity shaped to receive an end of a product to be packaged.

3. The package of claim 2, wherein the end cap includes support ribs extending radially from the cavity to an interior wall of the end cap.

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4. The package of claim 2, further including a second cavity shaped to receive a second end of a product to be packaged.

5. The package of claim 4, wherein the end cap includes support ribs extending

30 radially from each cavity to an interior wall of the end cap.

6. The package of claim 5, wherein the end cap includes a support rib extending across the end cap, between the two cavities.



7. The package of claim 1, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

5 8. The package of claim 7, wherein each of the locking tabs is trapezoidal and has an acute vertex that rides up a side edge of the channel when the end cap is twisted relative to the sleeve, such that the end cap is released from the sleeve.

9. The package of claim 8, wherein the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides  
10 up the ramped side edge, such that the end cap is released from the sleeve.

10. The package of claim 1, wherein the sleeve includes a second end defining a second opening, and wherein the package further comprises:

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a second locking tab extending from the second end and folded inward into the second opening, the second locking tab having a locking edge.

a second end cap having a substantially continuous outer surface dimensioned  
20 to fit closely within the second opening, the second end cap including a rim overhanging the outer surface such that, when the second end cap is inserted into the second opening, the rim engages the second sleeve end and prevents the second end cap from being inserted further into the second opening, the second end cap including  
a channel for receiving the second locking tab, the channel having a ledge that  
25 engages the locking edge of the second locking tab to prevent the second end cap from being removed from the second sleeve opening.

11. An end cap, comprising:

30 a substantially continuous outer surface that is dimensioned to fit closely within an opening in a sleeve end;

a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being

inserted further into the opening, the outer surface including at least one channel for receiving a locking tab extending from the sleeve, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

12. The end cap of claim 11, further including a cavity shaped to receive an end of a product to be packaged.

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13. The end cap of claim 12, further including support ribs extending radially from the cavity to an interior wall of the end cap.

14. The end cap of claim 12, further including a second cavity shaped to receive a second end of a product to be packaged.

15. The end cap of claim 14, further including support ribs extending radially from each cavity to an interior wall of the end cap.

16. The end cap of claim 15, further including a support rib extending across the end cap, between the two cavities.

17. The end cap of claim 11, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

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18. The package of claim 7, wherein the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

19. A method for fabricating a package, comprising:

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(a) cutting and scoring a sleeve blank to create first and second panels, a glue flap extending from the first panel, and locking tabs extending from each of the panels;

- (b) folding the second panel over the first panel;
- (c) folding the glue flap and affixing it to the second panel, the first and second panels forming a sleeve;
- 5 (d) folding the locking tabs inward into the sleeve;
- (e) inserting a rigid end cap into a first end of the sleeve, the end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the first end of the sleeve;
- (f) loading a product into the sleeve;
- 10 (g) inserting a second rigid end cap into a second end of sleeve, the second end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the second end of the sleeve.

**PRODUCT CONTAINER WITH LOCKING END CAP****BACKGROUND OF THE INVENTION**

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**Field of the Invention**

The present invention relates generally to the field of product packaging, and in particular to product containers having a locking end cap.

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**Description of the Prior Art**

Product packaging serves a number of different functions, including: protecting the packaged product from accidental damage, attractively displaying the packaged product, and preventing theft or tampering. In addition, it is desirable for a package to be as inexpensive to manufacture as possible.

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There is an ongoing need in the packaging industry for new package designs.

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**SUMMARY OF THE INVENTION**

A first aspect of the invention provides a package, comprising:

a sleeve including at least one end defining an opening, the sleeve including at least one locking tab extending therefrom, the locking tab including a locking edge, the locking tab being folded inwards into the opening; and

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a rigid end cap including a substantially continuous outer surface that is dimensioned to fit closely within the opening, the end cap further including a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving the locking tab, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the

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**channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.**

5            Preferably, the end cap includes a cavity shaped to receive an end of a product to be packaged.

            Preferably, the end cap includes support ribs extending radially from the cavity to an interior wall of the end cap.

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            Alternatively, there further includes a second cavity shaped to receive a second end of a product to be packaged.

            Preferably, the end cap includes support ribs extending radially from each  
15          cavity to an interior wall of the end cap.

            Preferably, the end cap includes a support rib extending across the end cap, between the two cavities.

20           Alternatively, the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

            Preferably, each of the locking tabs is trapezoidal and has an acute vertex that rides up a side edge of the channel when the end cap is twisted relative to the sleeve,  
25          such that the end cap is released from the sleeve.

            Preferably, the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

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            Alternatively, the sleeve includes a second end defining a second opening, and wherein the package further comprises:

2a

a second locking tab extending from the second end and folded inward into the second opening, the second locking tab having a locking edge.

- 5 A second end cap having a substantially continuous outer surface dimensioned to fit closely within the second opening, the second end cap including a rim overhanging the outer surface such that, when the second end cap is inserted into the second opening, the rim engages the second sleeve end and prevents the second end cap from being inserted further into the second opening, the second end cap including
- 10 a channel for receiving the second locking tab, the channel having a ledge that engages the locking edge of the second locking tab to prevent the second end cap from being removed from the second sleeve opening.

A second aspect of the invention provides an end cap, comprising:

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a substantially continuous outer surface that is dimensioned to fit closely within an opening in a sleeve end;

- a rim overhanging the outer surface such that, when the end cap is inserted
- 20 into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving a locking tab extending from the sleeve, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end
- 25 cap is releasable by twisting the end cap relative to the sleeve.

Preferably, there further includes a cavity shaped to receive an end of a product to be packaged.

- 30 Preferably, there further includes support ribs extending radially from the cavity to an interior wall of the end cap.

Alternatively, there further includes a second cavity shaped to receive a second end of a product to be packaged.

2b

Preferably, there further includes support ribs extending radially from each cavity to an interior wall of the end cap.

- 5            Preferably, there further includes a support rib extending across the end cap, between the two cavities.

Alternatively, the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

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Alternatively, the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

- 15           A third aspect of the invention provides a method for fabricating a package, comprising:

- 20           (a)    cutting and scoring a sleeve blank to create first and second panels, a glue flap extending from the first panel, and locking tabs extending from each of the panels;
- (b)    folding the second panel over the first panel;
- (c)    folding the glue flap and affixing it to the second panel, the first and second panels forming a sleeve;
- (d)    folding the locking tabs inward into the sleeve;
- 25           (e)    inserting a rigid end cap into a first end of the sleeve, the end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the first end of the sleeve;
- (f)    loading a product into the sleeve;
- (g)    inserting a second rigid end cap into a second end of sleeve, the second
- 30           end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the second end of the sleeve.

**We claim:**

## 1. A package, comprising:

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a sleeve including at least one end defining an opening, the sleeve including at least one locking tab extending therefrom, the locking tab including a locking edge, the locking tab being folded inwards into the opening; and

10 a rigid end cap including a substantially continuous outer surface that is dimensioned to fit closely within the opening, the end cap further including a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being inserted further into the opening, the outer surface including at least one channel for receiving the  
15 locking tab, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

20 2. The package of claim 1, wherein the end cap includes a cavity shaped to receive an end of a product to be packaged.

3. The package of claim 2, wherein the end cap includes support ribs extending radially from the cavity to an interior wall of the end cap.

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4. The package of claim 2, further including a second cavity shaped to receive a second end of a product to be packaged.

5. The package of claim 4, wherein the end cap includes support ribs extending  
30 radially from each cavity to an interior wall of the end cap.

6. The package of claim 5, wherein the end cap includes a support rib extending across the end cap, between the two cavities.



7. The package of claim 1, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

5 8. The package of claim 7, wherein each of the locking tabs is trapezoidal and has an acute vertex that rides up a side edge of the channel when the end cap is twisted relative to the sleeve, such that the end cap is released from the sleeve.

9. The package of claim 8, wherein the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

10. The package of claim 1, wherein the sleeve includes a second end defining a second opening, and wherein the package further comprises:

15

a second locking tab extending from the second end and folded inward into the second opening, the second locking tab having a locking edge.

20 a second end cap having a substantially continuous outer surface dimensioned to fit closely within the second opening, the second end cap including a rim overhanging the outer surface such that, when the second end cap is inserted into the second opening, the rim engages the second sleeve end and prevents the second end cap from being inserted further into the second opening, the second end cap including a channel for receiving the second locking tab, the channel having a ledge that  
25 engages the locking edge of the second locking tab to prevent the second end cap from being removed from the second sleeve opening.

11. An end cap, comprising:

30 a substantially continuous outer surface that is dimensioned to fit closely within an opening in a sleeve end;

a rim overhanging the outer surface such that, when the end cap is inserted into the opening, the rim engages the sleeve end and prevents the end cap from being

inserted further into the opening, the outer surface including at least one channel for receiving a locking tab extending from the sleeve, the channel having a ledge that engages the locking edge of the locking tab to prevent the end cap from being removed from the sleeve opening, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

12. The end cap of claim 11, further including a cavity shaped to receive an end of a product to be packaged.

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13. The end cap of claim 12, further including support ribs extending radially from the cavity to an interior wall of the end cap.

14. The end cap of claim 12, further including a second cavity shaped to receive a second end of a product to be packaged.

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15. The end cap of claim 14, further including support ribs extending radially from each cavity to an interior wall of the end cap.

16. The end cap of claim 15, further including a support rib extending across the end cap, between the two cavities.

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17. The end cap of claim 11, wherein the channel is shaped such that the end cap is releasable by twisting the end cap relative to the sleeve.

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18. The package of claim 7, wherein the channel has at least one ramped side edge, such that when the end cap is twisted relative to the sleeve, the locking tab rides up the ramped side edge, such that the end cap is released from the sleeve.

19. A method for fabricating a package, comprising:

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(a) cutting and scoring a sleeve blank to create first and second panels, a glue flap extending from the first panel, and locking tabs extending from each of the panels;

25

- (b) folding the second panel over the first panel;
- (c) folding the glue flap and affixing it to the second panel, the first and second panels forming a sleeve;
- 5 (d) folding the locking tabs inward into the sleeve;
- (e) inserting a rigid end cap into a first end of the sleeve, the end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the first end of the sleeve;
- (f) loading a product into the sleeve;
- 10 (g) inserting a second rigid end cap into a second end of sleeve, the second end cap including at least one channel having a ledge that engages a locking edge of each locking tab extending from the second end of the sleeve.



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Corporation Street  
Rugby  
Warwickshire  
CV21 2DU  
United Kingdom

☑ D-80286 München  
☑ (+49-89) 2399-0  
Tx 523 858 opmu d  
Fax (+49-89) 23 99-44 65  
☑ P.B. 6818 Patendaan 2  
NL-2280 HV Rijswijk  
☑ (+31-70) 340-2040  
Tx 31 651 epo nl  
Fax (+31-70) 340-3016  
☑ D-10958 Berlin  
☑ (+49-30) 26901-0  
Fax (+49-30) 25901-840

**Bestätigung über den  
Eingang nachgereichter  
Unterlagen für Patentan-  
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**Eingereichte Unterlagen**

**Items filed**

**Pièces envoyées**

Anmeldungs- (und Direktions-*) Nr./Patent Nr. Application (and Directorate*) No./Patent No. N° de la demande (et de la direction*)/n° du brevet	Ihr Zeichen Your reference Votre référence	ggfs. Art und Datum der Unterlagen** Nature and date of items (optional)** Nature et date des pièces (facultatif)**
1 PCT/US03/22528	PWO041439	Letter dated 30 September 2004
2		Applicant's response (2 pages)
3		Amended description and claims
4		2 sets - 1 marked with highlighted
5		changes)
6		
7		
8		
9		
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\* falls bereits bekannt

\* if already known

\* si déjà connu

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